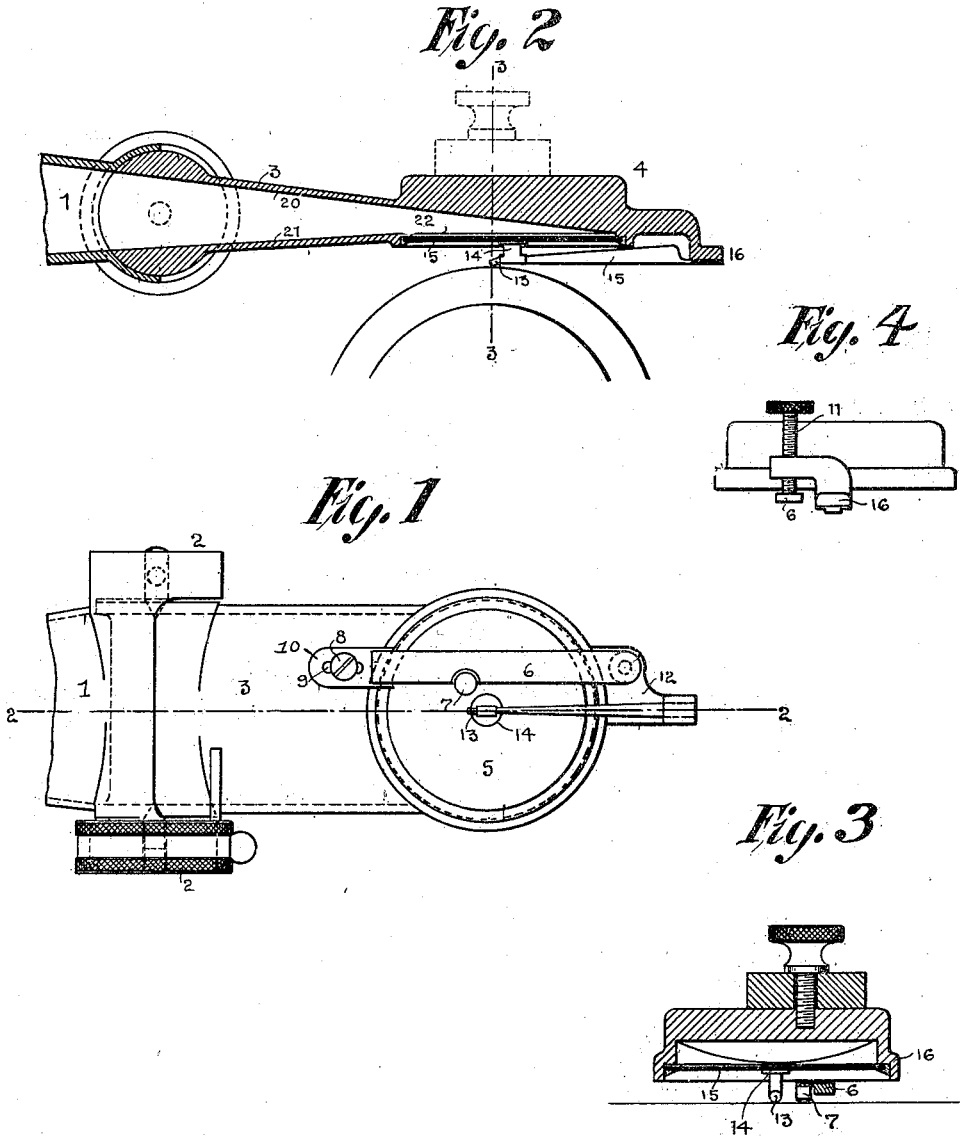


T. A. EDISON.  
PHONOGRAPH DETERMINING DEVICE.  
APPLICATION FILED JUNE 2, 1910.

1,046,414.

Patented Dec. 3, 1912.



*Witnesses:*  
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by Frank T. How  
His Atty.

# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, WEST ORANGE, NEW JERSEY, ASSIGNOR,  
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NEW JERSEY, A CORPORATION OF NEW JERSEY.

## PHONOGRAPH DETERMINING DEVICE.

1,046,414.

Specification of Letters Patent.

Patented Dec. 3, 1912.

Original application filed November 13, 1903, Serial No. 180,998. Divided and this application filed June 2,  
1910. Serial No. 564,581.

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex county, New Jersey, have invented certain new and useful Improvements in Phonograph Determining Devices, of which the following is a description.

My invention relates to determining devices for phonographs or talking machines, this application being a division of my application Serial No. 180,998, filed November 13, 1903 for apparatus for recording sounds.

The object of my invention is to provide a device for supporting the body of a phonograph recorder upon the surface upon which a record is being made, and to provide suitable means for adjusting the relative position of the supporting device and the body of the recorder while the machine is in operation and the record surface is revolving.

The supporting device is preferably a ball of sapphire or other jewel. It is to be understood that the weight of the recorder is borne by this ball which rides upon the surface of the rotating record blank, the depth to which the recording stylus may enter the surface of the blank depending upon the maximum distance the stylus may project below the supporting ball. It is important in recording that the position of the supporting ball or determining device may be adjusted while the machine is running, since the depth of cut of the recording stylus may require adjustment during operation to conform to the varying conditions which may be met.

In order that my invention may be better understood, attention is directed to the accompanying drawings forming part of this specification, in which—

Figure 1 is a bottom plan view of a recorder showing the preferred form of my improved determining device. Fig. 2 is a sectional view thereof taken on line 2—2 of Fig. 1. Fig. 3 is a sectional view taken on line 3—3 of Fig. 2; and Fig. 4 is a front view of the body of the recorder.

In all of the above views, corresponding parts are represented by the same reference characters.

The hollow tube 1 which is connected to or is a continuation of the usual horn or

funnel is carried by the usual support, not shown, and has ears 2, 2, between which is pivoted the head or barrel 3. To the latter is secured the sound box or body 4 to the lower face of which is connected the diaphragm 5. Across the lower face of the body and below the diaphragm is the tracking lever 6 which serves as a support for the ball 7, which latter rests upon a record surface shown in Fig. 2 as a section of a cylinder and supports the body, allowing it to oscillate about the pivot between the ears 2, 2 and accommodate itself to all large irregularities in the surface of the blank. The ball 7 is of a comparatively small curvature, but is sufficient to permit universal adjustment and is preferably made of a jewel of which sapphire seems to be the best material, as it does not have any appreciable effect upon the record blank; furthermore, it is susceptible to taking a high polish so that its passage over the record will not scratch or otherwise injure the same.

The lever 6 is connected to one end of the body 4 by means of a screw 8 which passes through a slot 9 formed within an elastic extension 10 of the lever, whereby an elastic connection is formed so that the lever, together with the ball 7, may be adjusted in relation to the center of the diaphragm in a direction longitudinally of the lever and substantially parallel to the diaphragm. The other extremity of the lever engages with the adjusting screw 11 passing through a threaded opening in an extension 12 on the body and by means of which the relative position of the ball 7 and the body may be adjusted when the machine is running.

The knife or recording stylus 13 is attached to the diaphragm adjacent to its center and on the same line of travel as the ball 7 by means of a support or foot 14. The foot 14 is secured to the diaphragm by a suitable cement, such as melted shellac. The foot 14 may be connected to one end of an elastic reed 15, the other end of which is secured to a pillar 16 formed upon a continuation of the body 4. It will be understood that my invention is not limited to the exact construction shown, but that it comprises all equivalent constructions and is only limited by the appended claims.

Having now described my invention, what I claim and desire to protect by Letters Patent is as follows:

1. In a recording device for recording sound waves, the combination with a body, of a diaphragm carried thereby, a lever having an elastic extension at one end, means securing said elastic extension to said body, a support carried by said lever adapted to engage the record, and means for adjusting the other end of said lever relative to said body, substantially as described.
2. In a recording device for recording sound waves, the combination with a body, of a diaphragm carried thereby, supporting means having an elastic connection with said body and adapted to engage the record, and means for adjusting the said supporting means relative to said body, substantially as described.
3. In a recording device for recording sound waves, the combination with a body, of a diaphragm carried thereby, supporting means having an elastic connection with said body and provided with a ball adapted to engage the record, and means for adjusting the said supporting means relative to said body, substantially as described.
4. In a recording device for recording sound waves, the combination with a body, of a diaphragm carried thereby, a lever having at one end an elastic connection with said body, a support carried by said lever and adapted to engage the record, and a screw mounted in a threaded opening in said body, the extremity of said screw engaging the other end of said lever for adjusting the position of the latter relative to said body, substantially as described.
5. In a recording device for recording sound waves, the combination with a body,

of a diaphragm carried thereby, a lever having at one end an adjustable connection with said body, said connection permitting longitudinal adjustment of said lever, a support carried by said lever and adapted to engage the record, and means for adjusting the other end of said lever relative to said body, substantially as described.

6. In a recording device for recording sound waves, the combination with a body, of a diaphragm carried thereby, a lever having at one end an adjustable elastic connection with said body, a support carried by said lever and adapted to engage the record, and means for adjusting the other end of said lever relative to said body, substantially as described.

7. In a recording device for recording sound waves, the combination with a body, of a diaphragm carried thereby, a lever having an elastic slotted portion at one end, a screw passing through the slot in said lever for securing the latter to said body, a support carried by said lever and adapted to engage the record, and means for adjusting the other end of said lever relative to said body.

8. In a device for recording sound waves, the combination with a body, of a diaphragm carried thereby, a stylus connected with said diaphragm, and supporting means adapted to engage the record and having an adjustable connection with said body, said connection permitting adjustment of said supporting means substantially parallel to the diaphragm, substantially as described.

This specification signed and witnessed this 31st day of May 1910.

THOS. A. EDISON.

Witnesses:

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JOHN M. CANFIELD.